Work Task C27: Small Mammal Population Studies

FY12 Estimate	FY12 Actual Obligations	Cumulative Expenditures Through FY12	FY13 Approved Estimate	FY14 Proposed Estimate	FY15 Proposed Estimate	FY16 Proposed Estimate
$50,000	$56,612.17	$337,641.01	$50,000	$50,000	$50,000	$25,000

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Start Date: FY08

Expected Duration: FY16

Long-term Goal: Determine distribution, genetics, habitat requirements, and establish monitoring protocol of covered small mammal species.

Conservation Measures: CRCR1, YHCR1.

Location: Reaches 3 through 7 from Davis Dam to the Southerly International Boundary with Mexico.

Purpose: To implement distribution, habitat, and genetics studies for system monitoring of LCR MSCP covered small mammal species. These studies are being conducted to determine geographic range limits of the Yuma hispid cotton rat and the Colorado River cotton rat, and to determine habitat requirements for these species. Data will be used through the adaptive management process to coordinate surveys of habitat creation sites and design habitat for covered mammal species.

Connections with Other Work Tasks (past and future): Data collected as part of Small Mammal Colonization (F3) will also be analyzed as part of the effort to determine species distribution of the two cotton rat species found along the LCR. Previous presence/absence surveys on small mammal populations were conducted under D10. This research will aide in developing a long term population monitoring protocol for small mammals and develop a habitat model for the two cotton rat species that can be used in restoration efforts (Section E) and adaptive management (Section G).

Project Description: Studies will be designed to determine the habitat usage, population status, genetic differentiation, and distributional range of two covered small mammal species: the Colorado River cotton rat and Yuma hispid cotton rat. Small mammals will be trapped in various habitat types along the LCR to collect genetic samples. Samples will be sent to a genetics laboratory for DNA analysis. Genetic differentiation data for animals captured along the LCR will also be compared with data from animals of different subspecies located within Arizona, east of the LCR MSCP planning area, to obtain genetic markers. These data will be used to compare and contrast specific subspecies and determine the distributional range of each species of cotton rat within the LCR watershed. Habitat use and population demographic analyses are currently being

estimated with mark-recapture analyses. A habitat model and population demography study will be implemented to determine habitat usage and establish a protocol for population monitoring at conservation areas.

Previous Activities: *Sigmodon* have been captured at seven localities along the LCR, including sites near Yuma, Arizona, Imperial NWR, Cibola NWR, PVER, and Pintail Slough on Havasu NWR. A study was initiated at the end of FY07 to determine genetic differentiation between covered small mammal species, distributional range for each species, and habitat usage along the LCR. In FY08, additional efforts were made to identify cotton rat populations, including sampling known populations along the LCR. Distribution and population genetic analyses have been conducted for these covered species. Population monitoring and habitat model development research began in FY10.

FY12 Accomplishments: Data collection for the habitat modeling portion of the study was completed.

FY13 Activities: The habitat modeling and the initial mark-recapture data sets for the Colorado River cotton rat will be analyzed and a report will be produced. The mark-recapture portion of the study will continue, focusing on more detailed population and demography data. Testing of the habitat model will begin and a draft protocol for long term monitoring of *Sigmodon* will be produced. Yuma hispid cotton rats will continue to be surveyed to discover a stable population where a habitat and demography study can be conducted.

Proposed FY14 Activities: Continue population/demography monitoring design and research. This study was expanded because long term datasets are necessary for this species due to the drastic population cycles, which may have short-term local effects on the population.

Pertinent Reports: The final report, *Colorado River and Yuma Hispid Cotton Rat Distribution and Habitat*, is available on the LCR MSCP website. The habitat modeling and population monitoring study design is available upon request.